# PC Presenter

Computer Control

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Introduction

The PC Presenter PC is a wireless PC keyboard and mouse controller that can be used as a standalone unit or as an bus device connected to a Central Controller via AXlink; controlling PC keyboard and mouse functions, and devices connected to the AXlink bus.

> **NOTE**
>
> *The PC Presenter transmitter is available with a built-in laser pointer (TXC-MSL), or without the laser pointer (TXC-MS).*

The PC Presenter (FIG. 1) consists of a TXC-MS(L) wireless transmitter and an AXR-MSE Wireless Mouse and Keyboard Controller (receiver/processor). The TXC-MS(L) transmitter has mouse controls and can be equipped with up to 24 pushbuttons with an engraved overlay. Each pushbutton performs a specific operation according to the Axcess software in your AMX control system, and the mouse disc and buttons control PC mouse functions. The TXC-MS(L)'s cordless hand-held design lets you interact with your audience and your computer with convenience and comfort.

TXC-MS(L) transmitter

AXR-MSE Wireless Mouse and Keyboard Controller (receiver/processor)

FIG. 1 PC Presenter - transmitter and receiver units

The PC Presenter can be used in stand-alone or AXlink mode. The PC Presenter can control a PC keyboard and mouse functions, plus any devices connected to the AXlink bus.

The PC Presenter can also be used in RF or IR control mode. Set the control mode by setting the transmitter DIP switch (refer to the Setting the TXC-MS(L) transmitter DIP switch subsection). IR applications require an external IR sensor (IRX-DM+ or IRX-SM+) configured for 455 KHz operation.

TXC-MS(L) Specifications	
Dimensions (HWD)	8.50" x 2.00" x 1.56" (21.59 cm x 5.08 cm x 3.96 cm)
Power	3.0 VDC (two AA alkaline batteries - supplied)
Enclosure	Molded black matte plastic
DIP switch	8-position sets IR or RF mode and radio mode
Pushbuttons	Up to 26 pushbuttons (with custom overlay)
Mouse controls	• 16-position mouse disc (two speeds), left and right mouse buttons • Trigger switch operates left mouse button on TXC-MS
Range	• RF: 1-way @ 200 ft (60.96 m) and 2-way @ 500 ft. (152.40 m) • IR: 30 ft (9.14 m)
Range	• IR: 455 KHz • RF: 418 MHz standard (315 MHZ and 433.9 MHz available)
Weight	• 0.35 lbs (0.16 kg) • 0.25 lbs (0.11 kg)
Included accessories	• Blank overlay • 2 AA alkaline batteries
Optional accessories	• Custom logos • Color text and borders on engraved overlay • Multiple engraved overlay colors • Laser pointer on TXC-MSL (L - laser pointer)

TXC-MS(L) Transmitter

The TXC-MS(L) is an ergonomically designed pushbutton transmitter with up to 26 pushbuttons, an optional laser trigger (TXC-MSL only), and PC mouse disc. The pushbuttons activate PC functions or Axcess Push_Commands via infrared (IR) or radio frequency (RF) transmission. FIG. 2 shows the PC Presenter transmitter and factory pushbutton configuration. A DIP switch located in the battery compartment sets the transmitter for either RF or IR control. For information on setting the TXC-MS(L) for RF or IR control, refer to the Setting the TXC-MS(L) transmitter DIP switch subsection.

FIG. 2 TXC-MS(L) mouse controls and 24 pushbutton locations

TXC-MS(L) controls

The TXC-MS(L) is available in configurations with up to 26 pushbuttons and PC mouse controls (mouse disc and left and right mouse buttons). The TXC-MS(L) includes a custom engraved overlay with text as desired by the customer.

TXC-MS(L) mouse controls

The TXC-MS(L) mouse disc affords you 360° control of cursor direction and speed. The two pushbuttons located on either side of the mouse disc replace those found on any standard Microsoft® compatible mouse.

To slow the mouse tracking speed, in Windows®, open the Windows Control Panel and select Mouse. In the Mouse Properties dialog box, set the pointer speed to near minimum. You can increase the speed setting as you become more familiar with the mouse disc.

For drag-and-drop operations, press and hold the left mouse pushbutton while moving the cursor to the desired location. Release this button to complete the drag operation.

Trigger switch

TXC-MS and TXC-MSL transmitters have a trigger switch on the underside of the transmitter (FIG. 3). TXC-MSL transmitters are equipped with a laser pointer. On the TXC-MSL, this switch operates the laser pointer. On the TXC-MS, the trigger duplicates the left mouse button.

TXC-MS(L) side view   TXC-MS(L) front view

Laser trigger
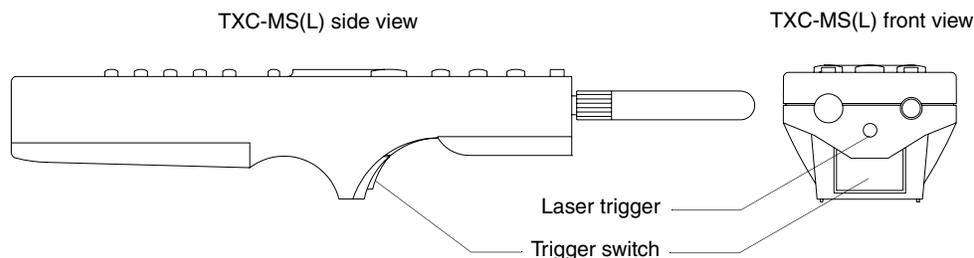
Trigger switch

FIG. 3 TXC-MS(L) trigger switch and laser pointer

*Radiation Hazard: Lasers produce light emissions that are harmful to the human eye. **DO NOT** look into or shine a laser beam into another person's eyes. Laser radiation can cause retina damage. **Read the following WARNING**.*
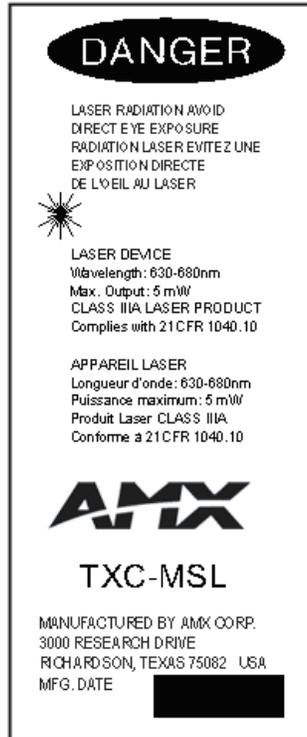
WARNING

FIG. 4 Laser Radiation warning

AXR-MSE Wireless Mouse and Keyboard Controller

The AXR-MSE is the receiver/processor component of the PC Presenter. The AXR-MSE receives RF or IR signals from the TXC-MS(L) transmitter using the attached RF receiving antenna or an external IR sensor. The AXR-MSE connects between the PC keyboard and mouse cables, and the keyboard and mouse ports on the PC CPU. The AXR-MSE uses a standard four-pin captive wire AXlink connector to connect to an AMX Central Controller.

AXR-MSE Specifications	
Dimensions (HWD)	• 1.86" x 5.63" x 4.06" (4.72 cm x 14.29 cm x 10.31 cm) • Height with antenna: 5.49" (13.96 cm) • Depth with connectors - 4.06" (4.47 cm) and with antenna - 5.12" (13.00 cm)
Power	65 mA (max draw) @ 12 VDC
Enclosure	Metal with black matte plastic
Receive frequency	RF: 418 MHz standard (other frequencies are available)
Front Panel	
AXlink	Green LED indicates AXlink communication as follows: • Off indicates no power or the controller is not functioning properly • One Blink per Second indicates normal operation. Device numbers match the programmed device numbers in the Axcess program on the master. • Full On indicates that there is no AXlink activity.
DIP switch	8-position sets the AXlink device ID
MOUSE LED	Red LED indicates mouse data transmission activity
KEYBOARD LED	Red LED indicates keyboard data transmission activity
DATA LED	Red LED indicates RF or IR signal reception

AXR-MSE Specifications (Cont.)	
Rear Panel	
TNC RF antenna	Accepts the flexible RF receiving antenna (up to 6 feet of RG-58 coax cable for remote antenna set up can also be used).
KEYBOARD IN/OUT	Two PS/2 style keyboard connectors are used to connect the AXR-MSE to the PC keyboard and CPU. The top connector, labeled "TO PC" connects the AXR-MSE to the CPU with a PS/2 style cable (included). Plug the PC keyboard into the bottom connector.
MOUSE IN/OUT	Two PS/2 style mouse connectors are used to connect the AXR-MSE to the PC mouse and CPU. The top connector, labeled "TO PC" connects the AXR-MSE to the CPU with a PS/2 style cable (included). Plug the PC mouse into the bottom connector.
External IR Sensor connector	4-pin data/power captive-wire is used to connect an optional external IR sensor (for IR applications).
AXlink connector	4-pin data/power captive-wire.
Power connector	Optional 2-pin +12V power captive-wire.
Included accessories	• 800 mA power supply @ 12 VDC • Two PS/2-style cables, male to male (6 ft.) • Two 4-pin captive-wire connectors (for AXlink and IR sensor) • One 2-pin captive-wire connector (for power)
Optional accessories	• 315 MHz and 433.9 MHz RF frequencies are available • External IR sensor

FIG. 5 shows the rear and front panel features of the AXR-MSE.
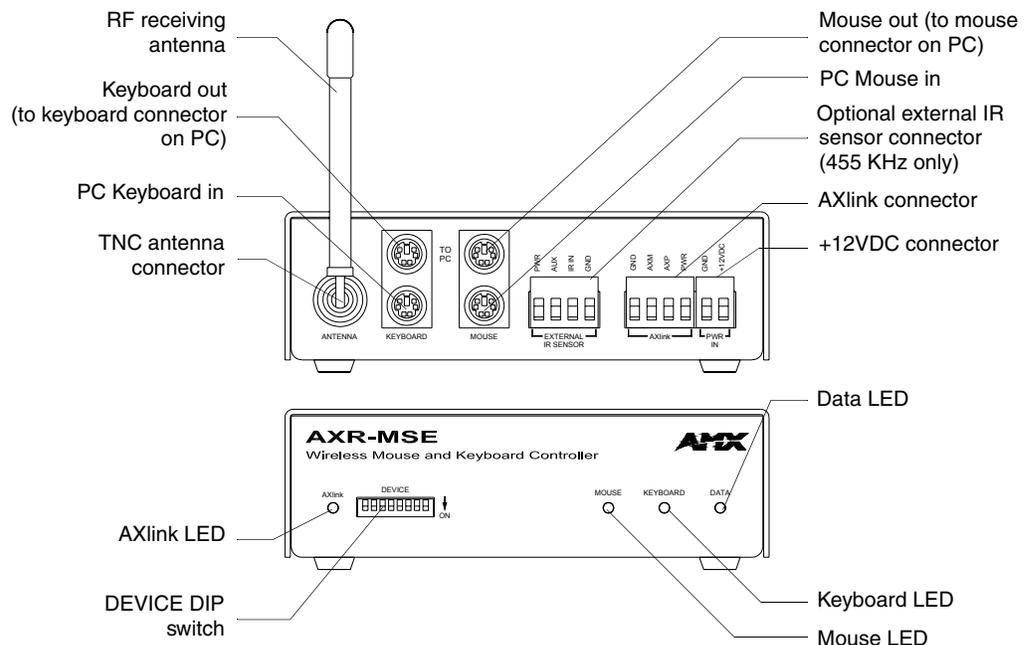
FIG. 5 AXR-MSE rear and front panel features

Pre-Installation

Setting the TXC-MS(L) transmitter DIP switch

The TXC-MS(L) transmitter transmits IR or RF signals, according to how you set position 1 on the 8-position DIP switch. The DIP switch is located under the battery cover, on the back of the TXC-MS(L), as shown in FIG. 6. To open the battery compartment, slide the cover down and remove.

8-position DIP switch

Battery compartment
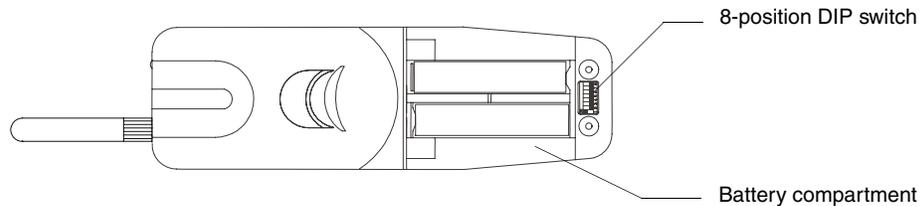
FIG. 6 Location of 8-position DIP switch and battery compartment locations

FIG. 7 shows the eight-position transmitter DIP switch.

DIP switch #1 sets IR or RF transmission

DIP switches #2 - 4 are not used

DIP switches #5 - 8 set the radio code of the transmitter
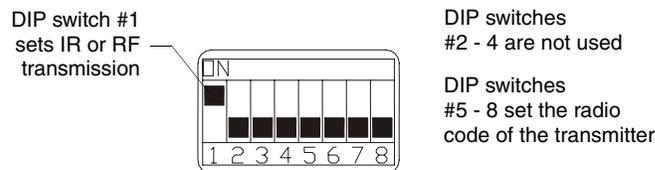
FIG. 7 Eight-position transmitter DIP switch

IR and RF Settings

The transmitter can be configured for either IR or RF, but not both. DIP switch position 1 sets the transmitter for IR or RF, as shown in FIG. 8.

IR mode
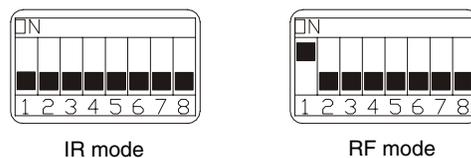
RF mode

FIG. 8 DIP switch settings for IR and RF modes

- Set position 1 to Off (down) for IR.
- Set position 1 to On (up) for RF.

Radio Code Settings

Each pushbutton on the TXC-MS(L) transmitter represents an Axcess channel number. All of the pushbuttons on the transmitter represent a group of channel numbers. This grouping is known as a radio code. Use the transmitter DIP switch to assign a unique radio code to this transmitter. Radio codes are important in applications that use more than one transmitter, because each transmitter must be assigned its own unique radio code. This is necessary to avoid interference between two or more transmitters.

The radio code is set with the last four positions on the eight-position transmitter DIP switch (see FIG. 7 on page 7). After the radio code is set on the transmitter, each button you press sends a specific channel number to the control system. For example, if your TXC-MS(L) transmitter is set to radio code 4 and you press button 1, channel number 64 is sent to the control system.

Setting radio codes

The following table lists the radio codes, DIP switch positions, and channel code ranges for the TXC-MS(L). The formula to determine the channel number of a TXC-MS(L) transmitter button is:

(Pushbutton number - 1) + (Radio code number multiplied by 16).

TXC-MS(L) radio codes, DIP switch settings, and channel code ranges						
Radio codes	DIP switch positions				Channel code ranges	
	5	6	7	8	From	To
1	ON	OFF	OFF	OFF	16	45
2	OFF	ON	OFF	OFF	32	61
3	ON	ON	OFF	OFF	48	77
4	OFF	OFF	ON	OFF	64	93
5	ON	OFF	ON	OFF	80	109
6	OFF	ON	ON	OFF	96	125
7	ON	ON	ON	OFF	112	141
8	OFF	OFF	OFF	ON	128	157
9	ON	OFF	OFF	ON	144	173
10	OFF	ON	OFF	ON	160	189
11	ON	ON	OFF	ON	176	205
12	OFF	OFF	ON	ON	192	221
13	ON	OFF	ON	ON	208	237
14	OFF	ON	ON	ON	224	253

FIG. 9 shows the pushbutton configuration of the TXC-MS(L).
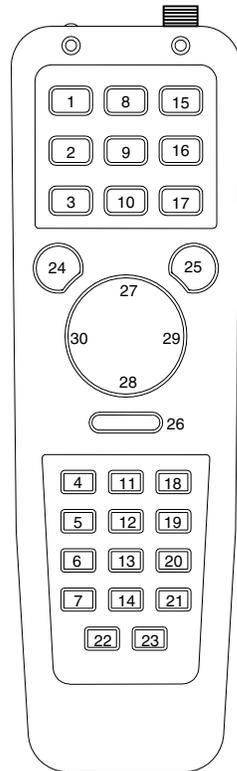
FIG. 9 TXC-MS(L) pushbutton configuration

Setting the Device DIP switch

The eight-position Device DIP switch located on the front panel of the AXR-MSE as shown in FIG. 10 sets the AXlink device number for the AXR-MSE. Each device on the AXlink bus must have a unique AXlink device number.
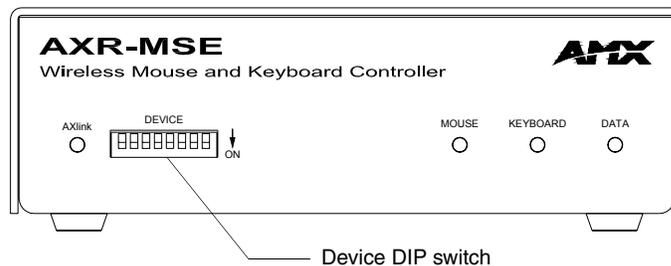
Device DIP switch

FIG. 10 AXR-MSE device DIP switch

If you later change the device number, remove and reconnect the AXlink connector.
This enters the new device number into memory.

NOTE

The device can be 1 of the 255 devices in an Axcess, Axcent, Axcent2, Axcent3, AXB-MPE, or AXB-EM232 system. The device number must match the device assignment in the Axcess program. AMX assigns device numbers into the following three segments:

- **Cards** - 1 through 95

- **Boxes** - 96 through 127

- **Panels** - 128 through 255

The device number takes effect only on power-up.

Set the device number by setting the device DIP switch. The device number is the total of all of the switches in the ON (down) position. The following table shows the switch numbers and their corresponding values.

Device DIP switch positions and values	
Position	**Value**
1	1
2	2
3	4
4	8
5	16
6	32
7	64
8	128

As an example, the following DIP switch settings define the AXR-MSE as device number 97 (1 + 32 + 64 = 97).

The AXR-MSE can operate without a keyboard. When the unit powers up it checks to see if there is a keyboard attached. If there is not, the unit resets (approx. 5 sec. later) and boots into a mode where it never checks the external keyboard again. You have to cycle power in order for the keyboard to be recognized.

Using the PC Presenter Without a PC Computer

You may want to use the AXR-MSE without a PC computer in certain applications. To use the AXR-MSE and a keyboard without the PC attached, you must set the AXR-MSE's internal slide switches. The internal switches are located on the circuit card inside the MSE enclosure, as shown in FIG. 11.

Top front view
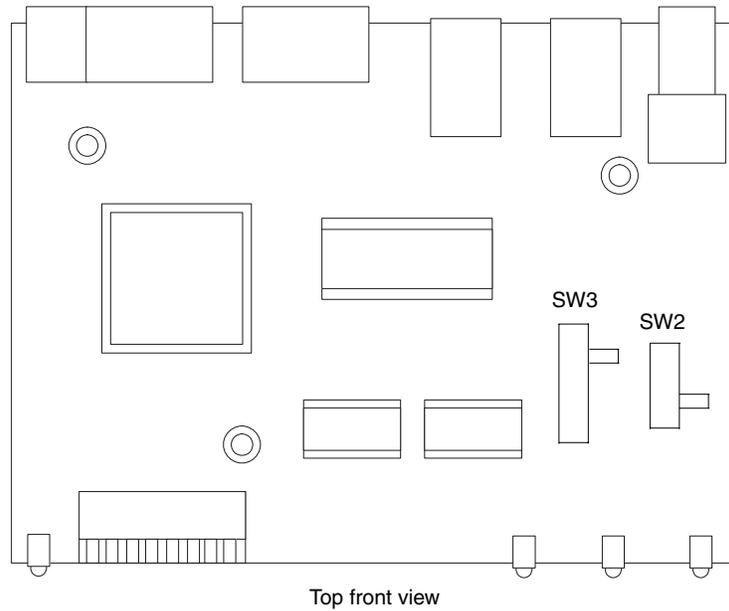
FIG. 11 AXR-MSE internal circuit board showing the location of the SW2 and SW3 slide switches

FIG. 12 shows a close-up view of the SW2 and SW3 internal slide switches.
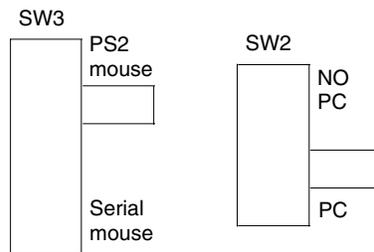
FIG. 12 Close-up view of SW2 and SW3 internal slide switches

1. Discharge the static electricity from your body and the screwdriver.

2. Unplug all connectors from the rear panel of the AXR-MSE.

3. Remove the four Phillips-head screws on the sides of the enclosure.

4. Remove the cover.

5. Set the AXR-MSE switch SW2 for use without a CPU as follows:

   ● For keyboard use without a PC, slide the SW2 switch to the "NO PC" position shown in FIG. 13.
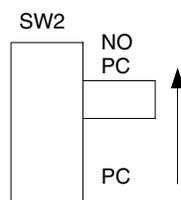
FIG. 13 Switch setting for keyboard use without PC connected

- For keyboard use with a PC, slide the SW2 switch to the "PC" position as shown in FIG. 14.

SW2
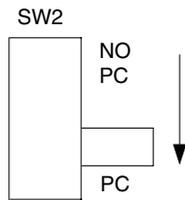
FIG. 14 Switch setting for keyboard use with PC connected

Setting Mouse Mode

The PC Presenter supports PS2 mice by default. If you prefer to use a serial mouse you must set internal slide switch SW3 for this mode (FIG. 15). Serial mice typically have a 9 pin D-sub connector. An adapter will be required to plug it into the mouse connector on the AXR-MSE.

- For use a serial mouse, slide the SW3 switch to the "serial mouse" position as shown in FIG. 15:

SW3
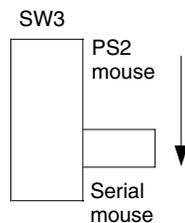
FIG. 15 Switch setting for use of a serial mouse

- For use a PS2 mouse, slide the SW3 switch to the "PS2 mouse" position as shown in FIG. 16:

SW3
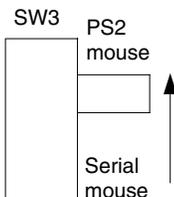
FIG. 16 Switch setting for use of a PS2 mouse

Wiring Requirements

The AXR-MSE uses a four-pin AXlink connector for power and data. If the distance between the AXR-MSE and the Central Controller exceeds power consumption limits, you must connect the included 12 VDC power supply to the AXR-MSE's two-pin PWR connector.

Do not connect power to the AXR-MSE until the wiring is complete. If you are using a 12 VDC power supply, apply power to the AXR-MSE only after installation is complete.

CAUTION

Wiring guidelines

The AXR-MSE requires 65 mA @ 12 VDC power to operate properly. The Central Controller supplies power via the AXlink cable. The maximum wiring distance between the Central Controller and AXR-MSE is determined by power consumption supplied voltage, and the wire gauge used for the cable. The following wiring guidelines table lists wire sizes and the maximum lengths allowable between the AXR-MSE and the Central Controller. The maximum wiring lengths for using AXlink power are based on a minimum of 13.5 volts available at the Central Controller's power supply.

Wiring Guidelines	
Wire size	**Maximum wiring length**
18	1805.70 ft (550.37 m)
20	1142.40 ft (382.20 m)
22	712.20 ft (217.07 m)
24	448.90 ft (136.82 m)

If the AXR-MSE is installed farther away from the control system than recommended in the above table, connect a 12 VDC power supply to the two-pin 12 VDC PWR IN connector on the rear panel.

Preparing captive wires

You will need a wire stripper, a soldering iron, solder, and a flat-blade screwdriver to prepare and connect the captive wires.

1. Strip 0.25 inch (0.64 cm) of wire insulation off all wires.

2. Insert each wire into the appropriate opening on the connector according to the wiring diagrams and connector types described in this section.

3. Turn the flat-head screws clockwise to secure the wire in the connector.

WARNING

Do not over-torque the screw. Doing so can bend the seating pin and damage the connector.

Installing the PC Presenter

This section describes how to connect the AXR-MSE to the PC and to the Central Controller. Before installation, check to verify that the Device DIP switch on the front panel of the AXR-MSE is set correctly. Setting the Device DIP switch is described in the previous section (*Setting the TXC-MS(L) transmitter DIP switch* section on page 7).

The PC Presenter can be set up for either stand-alone operation, or connected to a Central Controller via AXlink for system-wide control. The following sections describe both set-up scenarios.

Installing the PC Presenter for Stand Alone Operation

To use the PC Presenter as a stand-alone unit (not connected to AXlink), connect the AXR-MSE to the PC keyboard and mouse. As a stand alone unit, the PC Presenter controls PC keyboard and mouse functions. The following sub-sections describe connecting the PC Presenter for stand-alone operation.

> **NOTE**
>
> *The PC Presenter uses PS/2 style mouse and keyboard connectors.*

Step 1: Connecting the AXR-MSE to the PC keyboard and PC

To connect the AXR-MSE to the PC keyboard and PC:

1. Turn off your PC.
2. Disconnect the PC keyboard from the CPU.
3. Connect the PC keyboard cable to the bottom KEYBOARD connector on the rear panel of the AXR-MSE.
4. Using the supplied keyboard cable, connect the keyboard connector on the CPU to the top KEYBOARD connector on the AXR-MSE (labeled TO PC).

Step 2: Connecting the AXR-MSE to the PC mouse and PC

To connect the AXR-MSE to the PC mouse and PC:

1. Turn off your PC.
2. Disconnect the PC mouse from the CPU.
3. Connect the PC mouse cable to the bottom MOUSE connector on the rear panel of the AXR-MSE.
4. Using the supplied mouse cable, connect the mouse connector on the CPU to the top MOUSE connector on the AXR-MSE (labeled TO PC).

Step 3: Connecting an optional external IR sensor to the AXR-MSE

The AXR-MSE uses an optional external IR sensor to receive IR signals from the TXC-MS(L). To connect an external IR sensor to the AXR-MSE, connect one or more optional IRX-SM+ swivel-mount IR receivers or IRX-DM+ IR receivers to the AXR-MSE as shown in FIG. 17.
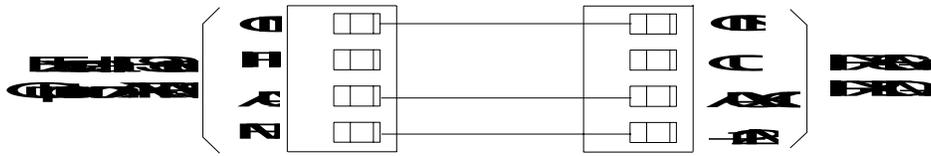
FIG. 17 IRX-SM+ or IRX-DM+ external IR sensor wiring diagram

Installing the PC Presenter for AXlink Operation

To use the PC Presenter as an integrated AXlink device, connect the AXR-MSE to the PC keyboard/mouse and a Central Controller. As an AXlink device, the PC Presenter controls PC keyboard/mouse functions as well as the devices on the AXlink bus.

To connect the PC Presenter for AXlink operation, follow the instructions listed under Step 1, Step 2 and Step 3 starting on page 15 to connect the PC keyboard, mouse and optional external IR receiver. The following sections describe connecting AXlink for power and data, and connecting an optional external 12VDC power supply.

Using AXlink for data and power

Connect the Central Controller's AXlink connector (male) on the rear panel of the AXR-MSE for data and 12 VDC power, as shown in FIG. 18.
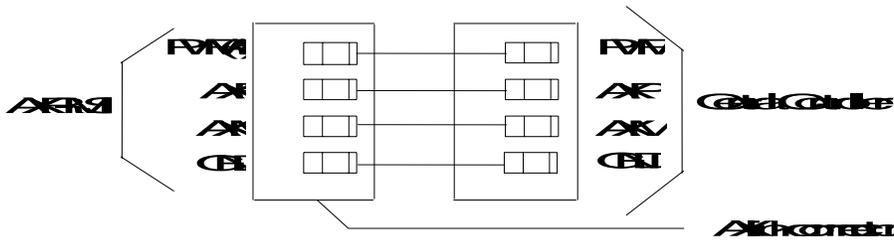
FIG. 18 IAXlink data and power wiring diagram

AXlink data and 12 VDC power supply connections

Connect the Central Controller's AXlink connector to the AXlink connector (male) on the rear panel of the AXR-MSE, and the optional 12 VDC power supply as shown in FIG. 19.
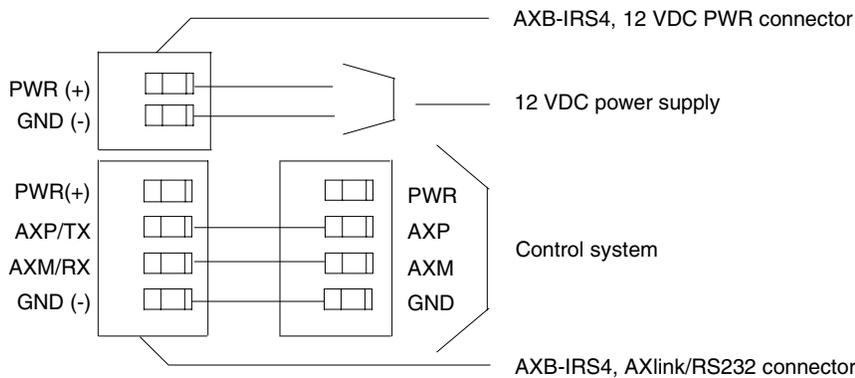
FIG. 19 IAXlink and optional 12 VDC power supply wiring diagram

Make sure to connect only the GND wire on the AXlink connector when using a 12 VDC power supply. Do not connect the PWR wire to the AXlink connector's PWR opening.

LED indicators

When the AXR-MSE is powered up, the front panel LEDs light to indicate the status of the unit as described below:

- **All LED's lighting sequentially from left to right** indicates that the AXR-MSE firmware is loaded and running.

- **Blinking pattern that alternates between the Mouse + Data LED's and the Keyboard LED** indicates that the AXR-MSE is running on boot code only, and has no downloaded program. You must download program code to operate the AXR-MSE.

Programming the PC Presenter

This section describes how to program the PC Presenter. Before programming, make sure the PC Presenter is properly installed:

- Verify that the PC keyboard and mouse are connected to the AXR-MSE, and the AXR-MSE is connected to the keyboard and mouse ports on the CPU.

- Device DIP switch settings (on the front panel of the AXR-MSE) match the device number assigned to it in the Axcess program.

There are two primary ways to use the PC Presenter: Stand-alone operation (not connected to AXlink), and AXlink operation. In stand-alone mode, the PC Presenter controls PC keyboard and mouse functions. Connected to a Central Controller via AXlink, the PC Presenter can control devices on the AXlink bus.

For information on installing the PC Presenter, refer to the Installing the PC Presenter for AXlink Operation section.

Programming the PC Presenter in Stand Alone Mode

The PC Presenter has two modes of programming in stand-alone mode: command mode, in which you give specific commands to the PC Presenter, and programming mode, in which you assign specific PC keystrokes to pushbuttons on the transmitter.

Using PC Presenter Commands

The PC Presenter has a set of six commands that allow you to clear the PC Presenter memory, list the commands, list the keycodes stored in PC Presenter memory (in both short and long form), display the amount of memory available in the PC Presenter, and display firmware version and copyright information.

To use the PC Presenter commands:

1. Begin at a DOS prompt on the PC that is connected to the AXR-MSE.

2. At the DOS prompt, enter program mode by selecting and holding the following keys on the PC keyboard:

> CTRL, then ALT then "." (period key).

*For PC keyboards with left and right <Ctrl> and <Alt> keys, only the left<Ctrl><Alt> "."
combination will work.*

NOTE

3. When these keys are released, program mode will be indicated by the following characters at the DOS prompt:

```
C:\>rem Press command key or transmitter button
C:\>rem
```

PRGM EX. 1

The characters `"C:\>rem"` before the blinking cursor indicates that the PC Presenter is in program mode, waiting for a command key.

4. Press a command key. For a listing of available commands, type the character `"H"`. This command displays the following list of available commands:

```
C:\>rem c Commands Available
C:\>rem c : Clear memory
C:\>rem h : List commands (Help)
C:\>rem l : Short form listing of keycodes
C:\>rem m : Display available memory
C:\>rem t : Long form list of stored keycodes (Type)
C:\>rem v : Display version and copyright info
C:\>
C:\> rem Exiting program/command mode
C:\>
```

PRGM EX. 2

5. The PC Presenter exits program/command mode each time a command key is pressed. You must re-enter program/command mode to enter any of the commands.

6. To return to program/command mode, press CTRL, ALT, and "." (period) keys. This brings back the program/command syntax:

```
C:\>rem Press command key or transmitter button
C:\>rem
```

PRGM EX. 3

The following paragraphs describe each of the PC Presenter keyboard commands.

C - Clear memory

Press `"C"` at the program/command prompt to clear the PC Presenter memory of all commands and programmed keystrokes. PC Presenter asks you to verify this action:

```
C:\>rem Clear memory (y/n)
```

PRGM EX. 4

To proceed with clearing the memory, press `"Y"`. PC Presenter tells you that the memory has been cleared:

```
C:\>rem Clear memory (y/n)y
C:\>rem Clearing Memory        **Done**
```

PRGM EX. 5

To abort this command, press `"N"`. PC Presenter tells you that the command has been aborted:

```
C:\>rem Clear memory (y/n)n Aborted
```

PRGM EX. 6

H - List commands (Help)

Press `"H"` at the program/command prompt to display the list of PC Presenter keyboard commands.

L - Short form listing of keycodes

Press `"L"` at the program/command prompt to display a listing of the keycodes currently saved in PC Presenter memory, in short form. A short form listing of keycodes contains the button code number and the size of the saved keycode. For example:

```
C:\>rem Code : 128     Size : 24 bytes
C:\>rem Code : 129     Size : 24 bytes
C:\>rem Code : 130     Size : 24 bytes
```
PRGM EX. 7

M - Display available memory

Press "M" at the program/command prompt to display the amount of memory available in the PC Presenter:

```
C:\>rem Memory available : 60436 bytes
```
PRGM EX. 8

T - Long form list of stored keycodes

Press "T" at the program/command prompt to display a listing of the keycodes currently saved in PC Presenter memory, in long form. A long form listing of keycodes contains the button code number, the size of the saved keycode, and the keystrokes recorded. The following example represents the keycode "Button 1" on button 128:

```
C:\>rem Code : 128     Size : 24 bytes
C:\>rem 32 F0 32 3C F0 2C 2C F0 2C 44 F0 44 31
```
PRGM EX. 9

V - Display version and copyright info

Press "V" at the program/command prompt to display the firmware version number, and copyright information, as shown in the example below:

```
C:\>rem Firmware version x1.001
C:\>rem Copyright AMX Corporation 2000
```
PRGM EX. 10

Programming Transmitter Pushbuttons

The program the transmitter pushbuttons.

1. Begin at a DOS prompt on the PC that is connected to the AXR-MSE.

2. At the DOS prompt, enter program mode by selecting and holding the following keys on the PC keyboard:

> CTRL, then ALT then "." (period key).

For PC keyboards with left and right <Ctrl> and <Alt> keys, only the left<Ctrl><Alt> "." combination will work.

NOTE

3. When these keys are released, program mode will be indicated by the following characters at the DOS prompt:

```
C:\>rem Press command key or transmitter button
C:\>rem
```
PRGM EX. 11

The characters "C:\>rem" before the blinking cursor indicate that the PC Presenter is in program mode, waiting for a command key.

All PC Presenter programming is retained in the PC Presenter's non-volatile memory.
It is not lost during power down or shipping.

4. Press the first transmitter button to be programmed. When the button is pressed, the button's code number and an asterisk (*) appear at the DOS prompt. The following example shows that the transmitter button (code number 128) was pressed.

```
C:\>rem (128)*
```
PRGM EX. 12

The asterisk after the button code number indicates that the PC Presenter is in programming mode, waiting for keystrokes to be assigned to the selected transmitter button.

5. Type the keystrokes that are to be executed by the corresponding transmitter button. For example, type `Button One`. The characters that you type are displayed on the screen as you type them.

To cancel a keystroke entry error, press a different radio transmitter button than the one used to initiate the current keystroke assignment. If you press a different button after keystrokes are entered, no changes are saved. This action cancels the new keystroke assignment, and the PC Presenter remains in program mode.

6. Press the same radio transmitter button (the button pressed in step 4 a second time. This action displays a second asterisk ("*") immediately after the recorded keystrokes, the transmitter button's code number, and the message `"*** Keystrokes saved ***"`. The example below shows that the transmitter button (code number 128) was programmed with the keystrokes `"Button One"`.

```
C:\>rem (128)*Button One*(128)     **Keystrokes saved**
C:\>rem Press transmitter button to store next radio code or
C:\>rem press any key on keyboard to exit
C:\>
C:\>rem
```
PRGM EX. 13

The PC Presenter remains in program mode until you tell it to exit

7. Repeat steps 4-6 to assign keystrokes to other buttons, or to change keystroke assignments for any programmed button.

Exiting program mode

To exit program mode, press any key on the PC keyboard. PC Presenter tells you that it is storing the new codes and keystrokes, when it is finished saving, and then that it is exiting program mode, as shown below:

```
C:\>rem Storing codes and keystrokes
C:\>rem Done
C:\>
C:\> rem Exiting program/command mode
```
PRGM EX. 14

Programmed keystrokes are not saved in permanent memory until program mode is exited.

NOTE

Programming the PC Presenter for Use With an Axcess Central Controller

The PC Presenter can be connected to a Central Controller via AXlink, to control devices on the AXlink bus. The following sub-sections describe the Axcess commands for the PC Presenter.

Creating a buffer for keyboard input

To recognize keyboard keystrokes in an Axcess program, you must create a buffer for the device in Axcess. To create a buffer, use the CREATE_BUFFER keyword. This keyword can only be placed in the DEFINE_START section of your program. The syntax is shown below:

```
CREATE_BUFFER <DEVICE> <ARRAY>
```
PRGM EX. 15

Standard keystrokes fill the buffer as ASCII characters. Special characters come in as their embedded code equivalents as shown in the Send_Strings table on page 24 of this manual, in the Send_Strings subsection. For more information on using buffers, refer to the *Axcess Programming Guide*.

Send_Commands

Use the Send_Commands listed in the following table to program the Axcess Control System and the PC Presenter. Refer to the *Axcess Programming Guide* for additional programming information.

Send_Commands	
Command	**Description**
'CLRM'	Clears permanent keystroke macro memory.
'DCODEOFF'	Disables AXlink Channel Codes from mouse disc.
'DCODEON'	Enables AXlink Channel Codes from mouse disc (default).
'IROFF'	Disables IR reception.
'IRON'	Enables IR reception (default).
'KBOFF'	Disables keystrokes from attached keyboard to PC.
'KBON'	Enables keystrokes from attached keyboard to PC (default).
'PMACRO<n>'	Invokes playback of keystroke macro for channel code n.
	<n> = ASCII number from 1 to 255.
'MOUSEOFF'	Disables mouse control from TXC-MS(L) to PC.
'MOUSEON'	Enables mouse control from TXC-MS(L) to PC (default).
'MSPEED<S>'	Set speed of TXC-MS(L) mouse disc.
	<s> = ASCII number from 1 to 16 (default = 4)
'P<n>R<s>'	Set speed number n to value s (for AXlink channel mouse control).
	<n> = ASCII '1' or '2'
	<s> = ASCII number from 0 to 255

Send_Commands (Cont.)	
Command	**Description**
'REPEATOFF'	Disables macro repeat when holding transmitter button.
'REPEATON'	Enables macro repeat when holding transmitter button (default).
'RMACRO<n>-<s>'	Records strings in keystroke macro memory under channel code n. <n> = ASCII number 1 to 255 <s> = ASCII string
'RFOFF'	Disables RF reception.
'RFON'	Enables RF reception (default).
'TXID<n>'	Sets the transmitter ID, for mouse disc only. Only TXC-MS(L) with the radio code set to n will be recognized. <n> = ASCII number 0 to 16. • Set <n> from 0 to 15 for specific radio codes.· • Set <n> to 16 to enable mouse disc control from all radio codes (default). This parameter is stored in memory even if the unit is powered down.
'XINVERT'	Reverses the direction the PC's cursor moves horizontally in response to AXLink levels. This parameter is stored in memory even if the unit is powered down.
'YINVERT'	Reverses the direction the PC's cursor moves vertically in response to AXLink levels. This parameter is stored in memory even if the unit is powered down.

Send_Strings

All received Send_Strings are translated to keystrokes and output to the attached PC's keyboard port. The following table represents the embedded codes defining special characters that can be included with the string but may not be represented by the ASCII character set.

Send_Strings		
Decimal	**Hexadecimal**	**Keystroke**
8	$08	BACKSPACE
13	$0D	ENTER
27	$1B	ESC
128	$80	CTRL key down
129	$81	ALT key down
130	$82	SHIFT key down
131	$83	F1
132	$84	F2
133	$85	F3
134	$86	F4
135	$87	F5
136	$88	F6
137	$89	F7
138	$8A	F8
139	$8B	F9
140	$8C	F10
141	$8D	F11

Send_Strings (Cont.)

Decimal	Hexadecimal	Keystroke
142	$8E	F12
143	$8F	NUM LOCK
144	$90	CAPS LOCK
145	$91	INSERT
146	$92	DELETE
147	$93	HOME
148	$94	END
149	$95	PAGE UP
150	$96	PAGE DOWN
151	$97	SCROLL LOCK
152	$98	PAUSE
153	$99	BREAK
154	$9A	PRINT SCREEN
155	$9B	SYSRQ
156	$9C	TAB
157	$9D	WINDOWS
158	$9E	MENU
159	$9F	UP ARROW
160	$A0	DOWN ARROW
161	$A1	LEFT ARROW
162	$A2	RIGHT ARROW
192	$C0	CTRL key up
193	$C1	ALT key up
194	$C2	SHIFT key up

Mouse Control Channels

While on, channels 1 through 32 will move the mouse cursor in one of 16 directions and one of two speeds. The following table lists the direction and speed for each channel.

Mouse Control Channels

Channel	Direction	Speed
1	North	@speed1
2	North/Northeast	@speed1
3	Northeast	@speed1
4	East/Northeast	@speed1
5	East	@speed1
6	East/Southeast	@speed1
7	Southeast	@speed1
8	South/Southeast	@speed1
9	South	@speed1
10	South/Southwest	@speed1
11	Southwest	@speed1
12	West/Southwest	@speed1
13	West	@speed1
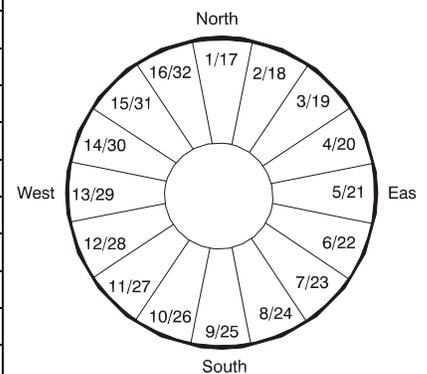
Mouse Control Channels (Cont.)		
Channel	Direction	Speed
14	West/Northwest	@speed1
15	Northwest	@speed1
16	North/Northwest	@speed2
17	North	@speed2
18	North/Northeast	@speed2
19	Northeast	@speed2
20	East/Northeast	@speed2
21	East	@speed2
22	East/Southeast	@speed2
23	Southeast	@speed2
24	South/Southeast	@speed2
25	South	@speed2
26	South/Southwest	@speed2
27	Southwest	@speed2
28	West/Southwest	@speed2
29	West	@speed2
30	West/Northwest	@speed2
31	Northwest	@speed2
32	North/Northwest	@speed2
33	Left mouse button	
34	Right mouse button	

Using Levels

The mouse operates on an X-Y (horizontal-vertical) axis. Level one is the X-axis and level two is the Y-axis. The range for both levels is 0-255. To send a level from the TXC-MS(L) to an Axcess Central Controller, use the keyword CREATE_LEVEL in your Axcess program as shown below:

```
CREATE_LEVEL <device>, <1>, <x-pos>
CREATE_LEVEL <device>, <2>, <y-pos>
```

PRGM EX. 16

This allows the use of the TXC-MS(L) transmitter as a wireless joystick or as pointing device to another unit.

For detailed information on Axcess programming and using levels, refer to the *Axcess Programming Guide*.

Using the OLDesign Engraving Program

The AMX OLDesign software program is a Windows-based design tool for creating panel overlays, pushbutton names, and pushbutton operation descriptions. The operation descriptions are used when the Axcess operating software is programmed. OLDesign also contains an online help system that describes producing custom overlay designs and pushbutton descriptions, and then storing them on your computer. FIG. 20 shows the OLDesign main window and a sample TXC-MS overlay design. Refer to the *OLDesign for Windows Quick Reference Guide* for command instructions that can be used with the OLDesign online help system.
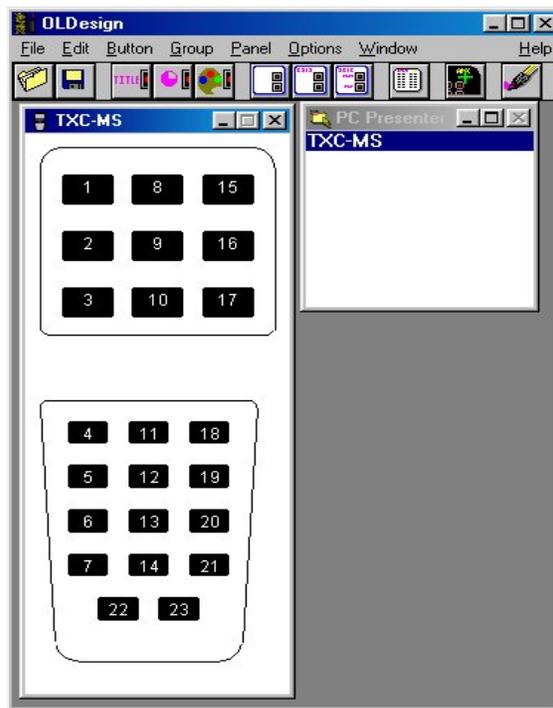

FIG. 20 OLDesign main window with example TXC-MS overlay

TXC-MS(L) Battery Replacement

The TXC-MS(L) transmitter uses two AA batteries. Under normal conditions, battery life will exceed one year. Use alkaline batteries for long battery life and optimum performance.

Replacing the batteries

The battery compartment of the TXC-MS(L) is located on the back of the transmitter (FIG. 21). Slide the battery compartment cover off, and replace the two AA batteries.


TXC-MS(L) bottom view

AA batteries

Battery compartment cover
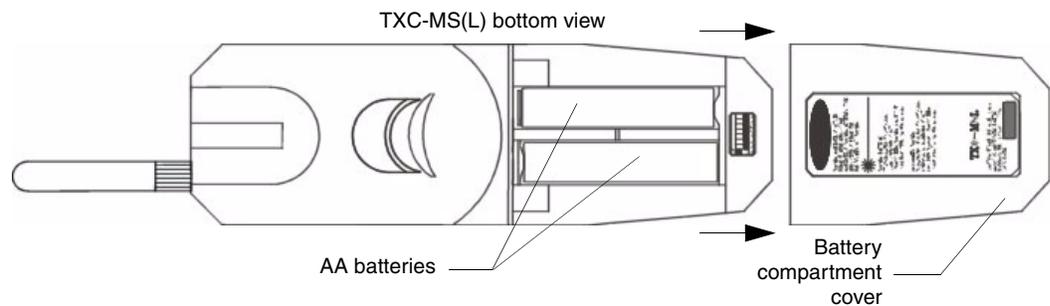
FIG. 21 TXC-MS(L) battery compartment

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